CHAPTER 4

PROCEDURES FOR PROVIDING TECHNICAL INFRASTRUCTURE

A. INTRODUCTION

Technical Infrastructure refers to the internal framework that must be built to implement the Operational Services. The products of this main activity are data administration procedures, infrastructure, and tools.

B. ESTABLISH DATA ADMINISTRATION PROCEDURES

1. Establish, Implement, and Maintain Procedures

a. Description: This activity develops and promotes the use of procedures that will guide the DoD Data Administration Program internally, and within Functional Areas and Components.

b. Purpose: To coordinate data administration activities and implementation across the Department of Defense, and ensure the goals and objectives established in the annual DoD DASP are achieved.

c. Inputs:

(1) Internal and external standards.

(2) DoD Directives, Instructions, and Manuals for information management, data administration, functional process improvement, and AIS life-cycle management.

(3) Common tools to be used.

(4) Functional process improvement “To Be” activity and/or data models.

(5) Data administration plans.

d. outputs:

(1) DoD data administration procedures.

(2) Functional Area data administration procedures that support the DoD data administration procedures.

(3) Component data administration procedures that support the

DoD data administration procedures.

e. Activities:

(1) Establish data administration procedures.

(2) Approve and implement-data administration procedures.

(3) Maintain data administration procedures.

2. Establish Data Administration Procedures

a. DoD data administration procedures implement the concept of operations for data administration. These procedures must be developed, approved, installed, supported, maintained, and updated following DoD 5025.1 -M (reference (p)).

b. DoD Directive 8320.1 (reference (c)) is the baseline document used in developing the DoD data administration procedures. Approved Component and Functional Area internal requirements for models, methods, tools, data, and information technology and the development of information that fits these requirements are incorporated into these procedures with any recommendations for improvements.

c. Since DoD data administration procedures are the overall guiding force for data administration, questions and conflicts that arise must be resolved in a timely manner to ensure efficient and effective data administration. The DoD DAd provides answers and resolutions to the Department.

d. The DoD data administration procedures are used as a baseline when developing the Functional Area and Component data administration implementation procedures. The Functional Area and/or Component procedures not only support the DoD data administration procedures, but they address specific internal activities such as review and approval procedures. DBAds establish procedures which support the implementation, use, and continuity of an effective education program, including formalized training. The areas of database concepts, database design, effects of database operation, database standards, efficient database usage, and high-level languages are addressed.

3. Approve and Implement Data Administration Procedures

Once Functional Area, Component, and DoD data administration implementation procedures are developed, they are reviewed and approved by the OSD PSAS, Component Heads, and the DASD(IM), respectively. The procedures are then installed, published, and distributed as appropriate. Copies of Functional Area and Component procedures must be sent to the DoD DAd within 30 days of

publication.

4. Maintain Data Administration Procedures

All procedures will be updated and maintained on a regular basis to accurately reflect the current circumstances. The DoD DAd, FDAds, and CDAds are responsible for evaluating the procedures and for providing recommendations for maintenance and updates.

C. ESTABLISH THE DEFENSE DATA REPOSITORY SYSTEM (DDRS)

1. Develop, Implement, and Maintain the DDRS

a. Description: This activity develops and operates the DDRS for all DoD metadata and other reusable information from which applications and databases will be developed.

b. Purpose: To facilitate data sharing and integrated operations of systems by providing access to standard metadata.

c. Inputs:

(1) Functional requirements.

(2) Technical requirements.

(3) Operational requirements.

(4) Personnel requirements.

d. outputs:

(1) The DDRS.

(2) User support service.

(3) Documentation.

e. Activities:

(1) Develop the DDRS.

(2) Implement the DDRS.

(3) Maintain the DDRS.

2. Develop the DDRS

a. The DDRS will be developed by the DoD DAd using the requirements defined by Functional Areas and Components. The functional requirements should be submitted to the DoD DAd by the appropriate FDAd or CDAd. Appendix C discusses data administration tools, requirements, and applications.

b. A model of the repository is then developed that accommodates new information and new requirements. The actual repository is developed from this model and therefore also accommodates new and/or revised information and requirements.

3. Operate the DDRS

The DoD DAd is responsible for the effective and efficient operation of the repository and for ensuring that appropriate users are able to access the system and the information it contains.

4. Maintain the DDRS

Maintaining and updating the repository to reflect current circumstances is another responsibility of the DoD DAd. As Functional Area and Component requirements change, recommendations for changes to the repository models or the repository itself are created. These change recommendations should be made through the appropriate FDAd or CDAd to the DoD DAd. The DoD DAd will use a Configuration Steering Committee with representation from all user communities to assist in identifying and prioritizing repository requirements. The DoD DAd reviews these recommendations and then oversees the implementation.

D. ACQUIRE RESOURCES

1. Acquire Resources

a. Description: This activity acquires and uses necessary funds and manpower authority to fulfill *resource requirements as* identified in the DoD DASP.

b. Purpose: To provide the resources required to implement the data administration action plans.

c. Inputs:

(1) New DoD DASP.

(2) PPBS guidance.

d. outputs:

(1) Program Objective Memorandum (POM).

(2) Fulfilled resource requirements (financial, materiel, personnel and data).

e. Activities:

(1) Compile resource requirements.

(2) Obtain funding and manpower authority.

(3) Obtain resources.

2. Compile Resource Requirements

The DoD DAd, FDAds, and CDAds identify resource requirements for their respective area consistent with the DoD budget guidance documentation.

3. Obtain Funding and Manpower Authority

All DoD funding is obtained through the PPBS (reference (q)). The PPBS process is a cyclical, biennial process used to develop a plan, a program, and a budget for the Department of Defense. The PPBS provides a framework for making decisions on current and future programs through interrelated phases, consistent with national security objectives, policies, and strategies.

4. Obtain Resources

Manpower authority and funding are used by the DoD DAd, FDAds, and CDAds to obtain the resources required to build the technical infrastructure and perform the operational services for data administration in their areas. Funds are used to hire personnel, purchase materiel, and procure contractor services outlined in the approved DoD DASP, and Functional Area and Component data administration plans.

E. DATA MODEL DEVELOPMENT, APPROVAL, AND MAINTENANCE

1. Model Development, Approval and Maintenance

a. Description: This activity develops, approves, and maintains data models within the Department of Defense. (See Appendix D.)

b. Purpose: To provide the correct framework from which standard data are developed and to identify opportunities for improving data administration activities.

c. Inputs:

(1) Activity models.

(2) Data requirements.

d. outputs: Data models.

e. Activities:

(1) Develop data models.

(2) Approve data models.

(3) integrate data models.

(4) Maintain data models.

2. The DoD Enterprise Model (reference (k)) is a representation of the activities and data of the Department of Defense, and the data component is a strategic level view of the DoD Data Model. The DoD Data Model extends down to the level of data entities, attributes, and relationships in concert with the definition of more detailed DoD activities. The fundamental objective of the DoD Data Model is to provide the basic data architecture for effective data administration across the Department. The DoD Data Model together with the DoD Activity Model comprise the DoD Enterprise Model. The DoD DAd is responsible for the development, approval, integration, maintenance, and extension of the DoD Data Model.

3. To implement data administration in a Functional Area or Component, data models must be developed, approved, and managed to accurately reflect the data in the Functional Area or Component. FDAds and CDAds are encouraged to communicate with the DoD DAd early in the modeling life-cycle to accelerate integration into the DoD Data Model.

4. Develop Models

Data model development normally begins with activity modeling, which is covered in the ASD(C3I) Memorandum (reference (h)). Using activity models as a guide, data models are developed to reflect “as is” and “to be” functional data requirements. While “as is” models may not comply with standards, the “to be” models must adhere to DoD data modeling and naming standards. The creation and refinement of activity models and data models is an iterative process. The models are developed by the FDAds and CDAds in conjunction with the FAPMs and the Component personnel in charge of functional activities within the Component. The models are then reviewed, coordinated, and approved by the respective OSD PSA or Component Head. Cross-functional coordination is performed with the

assistance of the DASD(IM)FIMs. These data models should then be submitted to the DoD DAd using the DoD standard presentation language called the Integrated Computer-Aided Manufacturing Definition (IDEF) language. IDEF0 (IDEF zero) and IDEF1X (IDEF one x) are the DoD standard presentation styles used for activity and data modeling.

5. Approve Models

Approval of data models is given by the FDAds who act as representatives of the OSD PSAs, the CDAds who act as representatives of the Component Heads, and the DoD DAd who ensures cross-functional coordination.

6. Integrate Models

After approval, the data model is integrated into the DoD Enterprise Data Model by the DoD DAd with consultation of the FDAds, CDAds, and the DASD(IM) FIMs. This integration provides for data sharing and ensures integrated operations can be performed.

7. Maintain Models

Management of data models includes updates to these models made by the FDAd/FAPM and CDAd/Component functional activity expert teams to accurately reflect process and data improvements. As new information requirements are identified, the DoD Data Model will continue to change causing data entities, attributes, and relationships to be added, modified, or archived. FDAds and CDAds will ensure implementation of the updated standard data within their Functional Area or Component. Approved models are stored in the DDRS using tools and methods specified by the DoD DAd.

F. STANDARD DATA DEVELOPMENT, APPROVAL, AND MAINTENANCE

1. Data Standardization

a. Description: This activity develops DoD standard data using models. (See Appendix E.)

b. Purpose: To create standard data which directly allows for horizontal and vertical sharing of data, and facilitate integrated operations.

c. Inputs:

(1) Data requirements.

(2) Data entities and attributes from data models.

(3) Data standardization policies and procedures.

d. outputs:

(1) DoD standard data (e.g., standard data elements and data structures).

(2) Documentation of DoD standard data and metadata.

e. Activities:

(1) Develop DoD candidate standard data.

(2) Submit and approve DoD candidate standard data in accordance with procedures.

(3) Document and maintain DoD standard data descriptions in the DDRS and data element values in databases.

2. Develop Candidate Standard Data

Candidate standard data are developed using approved, integrated data models. Standard data elements are driven out of these integrated data models as described in the DoD "Data Element Standardization Procedures" (reference (f)). The data elements reflect data pertinent to that Functional Area or Component and are developed and documented by the FDAd's and CDAd's staff.

3. Submit and Approve Candidate Standard Data

Preliminary reviews of the candidate standard data and metadata are conducted by the appropriate FDAd or CDAd. The FDAd or CDAd will ensure that the information adheres to technical and functional requirements. This review process is specified by the FDAd/CDAd in an internal data administration implementation procedure document. Formal technical and functional reviews are conducted by the DoD DAd and FDAds, respectively; FDAds must, therefore, develop a formal functional review procedure. DoD DAd technical approval and FDAd functional approval will result in the candidate standard becoming approved standard data. The DDRS supports the approval process electronically.

4. Document and Maintain Standard Data

The DDRS supports the development and maintenance of descriptions of standard data elements, data entities, data structures, and metadata. FDAds and CDAds will submit data entities and attributes to DISA for standardization and DoD approval. Also, to maintain data integrity and to preserve interfaces when changes occur to standard data, FDAds and CDAds will ensure registration in the DDRS of

the information systems using standard data. This information also will be used to determine if the proposed change is cost-effective. Development, approval, and management of standard data elements is further explained in DoD Manual 8320.1-M-1 (reference {f)).

G. ACQUIRE COMMON TOOLS.

1. Acquire Common Tools

a. Description: This activity develops and supports the acquisition of common tools.

b. Purpose: To directly facilitate integrated operations and data sharing through the use of DoD-wide standard tools.

c. Inputs:

(1) Functional requirements.

(2) Technical requirements.

(3) Operational requirements.

(4) DoD Directives and Instructions,

(5) Data administration plans.

(6) Operational tests and evaluations.

(7) Standards.

d. outputs: Common tools.

e. Activities: Acquire common tools.

2. To facilitate integrated operations and data sharing, common tools must be acquired and used. (See Appendix C.) Common tools will include, but are not limited to, a common repository, standard interfaces to that repository, information' engineering tools, and data quality assurance tools. Architectural standards for data will guide the information system design process, and automated tools will support the reuse of data and software. Data administration products and services will be used extensively to meet the requirements of new information system development and will result in reduced development cost and time.

3. To maintain a common tool infrastructure, licensing, installation, and distribution of software and supporting documentation will be acquired and

managed.

H. ACQUIRE DATA COLLECTION, DISTRIBUTION, AND STORAGE CAPABILITY

1. Acquire Data Collection, Distribution, and Storage Capability

a. Description: This activity develops and supports the acquisition of collection, distribution, and storage capabilities.

b. Purpose: To control and maintain the flow of data into, within, out of, and among various databases; to control how, where, and in what manner, data is stored and maintained within each database and among databases.

c. Inputs:

(1) Policies and requirements gathered and integrated by the DoD DAd, FDAds, and CDAds from users throughout the Department of Defense.

(2) Logical data models.

(3) Information technology infrastructure resources.

(4) Recommendations from computer operators, system developers, vendors, and users.

(5) Approved user processing and product requirements.

d. outputs:

(1) Physical data models.

(2) Subject area databases.

(3) Reusable database schemas.

e. Activities:

(1) Acquire data collection capability.

(2) Acquire data storage capability.

(3) Acquire data distribution capability.

2. Acquire Data Collection Capability

DBAds work with the FDAd or CDAd of the responsible organization to

provide a data collection capability necessary to support the needs of the Department of Defense. During the data collection stage the DoD DAd, FDAds, and CDAds must coordinate with the technical development activity and DBAds to ensure that the data quality requirements are implemented properly in databases and application software. When quality edit checks do not exist in legacy systems, the data must be extracted and examined manually or downloaded and analyzed with a data quality tool designed to generate the necessary quality edit checks.

3. Acquire Data Storage Capability

Acquire the database and storage when not already available. The DBAd, under the management of the AIS PMs, will install and load databases. Once installation and preliminary quality assurance tests are completed, the DBAd notifies the appropriate FDAd or CDAd. DBAds have the responsibility for the operational implementation of databases, from designing the physical database schemas and user views to guaranteeing the integrity and efficiency of the data access activities. The AIS PM helps manage these responsibilities. The DoD DAd must work to ensure adequate capability exists in the Department of Defense to meet the totality of user requirements.

4. Acquire Data Distribution Capability

Acquiring the data distribution capability including, if necessary, the rights to release or disclose purchased data. The DBAd then evaluates alternatives to find the best solution for data distribution based on cost-analysis and estimated costs for prospective services. To provide data distribution, the ways to distribute data to the various users are determined. The DBAd then evaluates alternatives to find the best solution for data distribution based on cost-analysis and estimated costs for prospective services. The DoD DAd must work with other DISA Component and Functional Area personnel to provide the capability to distribute data among the DoD databases to meet user requirements.

1. DEVELOP CUSTOMER SERVICE AND TRAINING PROGRAM

1. Develop Customer Service and Training Program

a. Description: The activity develops a customer service and training program to support DoD Data Administration across the Department of Defense.

b. Purpose: To ensure that DoD data administration personnel have the appropriate training and support to implement the DoD Data Administration program.

c. Inputs:

(1) Procedures.

(2) Requirements.

(3) DoD Directives, Instructions, and Manuals.

d. outputs:

(1) Training classes. .

(2) Customer Service.

e. Activities:

(1) Develop training classes.

(2) Develop customer service program.

2. The DoD DAd will develop and offer training courses to support the skills needed for data administration. The DoD DAd will acquire the appropriate services necessary to advertise and provide training to untrained FDAds and CDAds. The success of this program will furnish a trained data administration community.

3. A customer service program will also be developed to aid Functional Areas and Components in their implementation of data administration. This program will ensure each user has knowledge of access to the repository, correct use of DoD data administration procedures, and the use of the data administration products.